2009 Alabama A&M University and Tuskegee University and Auburn University Combined Research Plan of Work

Status: Accepted
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I. Plan Overview

1. Brief Summary about Plan Of Work

Alabama is fortunate to have three land-grant universities - Alabama A&M University, Auburn University, and Tuskegee University - with distinct programs at each institution based on clientele needs. As administrators of the Alabama Agricultural Research Program (AARP), we are working cooperatively to enhance partnerships among our universities in all areas of research, education, and extension; with other universities in the region, nationally, and internationally; and with state and federal laboratories and agencies. Alabama's three land-grant universities have played key roles in the development of agricultural enterprises in Alabama. The agricultural research programs of these universities have formed a partnership, via a memorandum of understanding, known as the Alabama Agricultural Land-Grant Alliance (AALGA) to better address critical issues in food, agriculture, environment, bioenergy, and natural resources in the state, region, and nation through multidisciplinary, multi-institutional, science-based teams that focus on the opportunities and the challenges facing farmers, consumers and agribusinesses. AALGA also seeks to provide quality education that prepares professionals for career opportunities in food, agriculture, environment, and natural resources. AALGA has received state funding in support of this partnership on an annual basis since FY 2002. Six program areas have been designed to address the most important component of the Alabama agricultural economy: Enhancing agricultural production systems, value-added processing, and competitiveness in the global economy; Food, nutrition, health and well-being, and agricultural biosecurity; Sustaining environment, ecosystems, and natural resources; Supporting and enhancing economic opportunities and self-empowerment for families and communities; Bioenergy and bio-based economy; and Agricultural genomics and other basic Agricultural sciences research. Within each of the planned program areas, attention will be given to addressing rural issues, public interest, citizen diversity, and sustainability. Research programs at each of our institutions are closely linked to the Alabama Cooperative Extension System.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2009	6.9	0.0	88.4	65.0
2010	6.9	0.0	88.4	65.0
2011	6.9	0.0	88.4	65.0
2012	6.9	0.0	88.4	65.0
2013	0.0	0.0	88.4	65.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel

2. Brief Explanation

Merit evaluations are conducted annually on each project by a panel of faculty, department chairs and administrators as appropriate. Programs that encompass several projects, particularly those with identified funding sources (i.e., the AAES Hatch/Multistate Funding Program) are evaluated by an administrative panel on an annual basis and for continued funding.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

Within each of the planned programs are some FTEs addressing one or more aspects of critical issues that have been identified by stakeholders. Other portions of planned programs are on-going in order to meet continuing demand for research and information, for example crop variety trial evaluations. Through listening sessions conducted for the Alabama Agricultural Experiment Station (AAES); AALGA joint discussions and planning meetings, focus groups, conferences, field days and selected advisory boards; several topics were identified by stakeholders as worthy of additional state funding and research efforts. These topics are poultry waste handling, inland aquacultures, dealing with invasive species, and eco-tourism.

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2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

As part of each of the planned programs, specific projects focus on varying needs of small-scale producers which tend to be under-served and under-represented populations.

3. How will the planned programs describe the expected outcomes and impacts?

Overall, the outcome measures and expected impacts are to demonstrate that agricultural research at our three institutions contribute to maintenance or growth in agricultural productivity, and in ag-related industries and endeavors. Specified outcome measures are data collected by state and federal agencies, and reflect demographic trends.

4. How will the planned programs result in improved program effectiveness and/or efficiency?

Each of the planned programs address state and national needs, and will ultimately contribute to efficiencies and effectiveness in agriculture and agriculturally related issues. Through the planned programs, knowledge gaps and areas in which critical research is needed will be identified, emerging technologies will be identified, and new approaches and technologies will be developed. Relative to all activities, programs will be communicated in varying ways to stakeholders so that improvements can be adopted as appropriate.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Survey of traditional stakeholder groups
- Targeted invitation to traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Targeted invitation to selected individuals from general public
- Use of media to announce public meetings and listening sessions

Brief explanation.

During four of the past five years, (fall 2004 through winter 2007), the SAES in conjunction with AALGA and its partners has hosted "listening sessions" at key locations across the state. These sessions were advertised in varying ways to reach as broad an audience as possible; they were open to the general public. Participants identified several strategic areas which are in need of additional resources and effort (i.e., research and extension). These areas are noted in this plan of work. Regular input is also received from stakeholders through commodity group leaders, from advisory boards, formal and informal surveys, focus groups field days, conferences and through discussion and feedback from state leaders on agricultural boards.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use External Focus Groups

- Use Advisory Committees
- Use Internal Focus Groups
- Open Listening Sessions
- Use Surveys

Brief explanation.

Several groups have been established and are continuing, such as advisory committees which we consider as encompassing grower and consumer groups. Surveys are conducted through various AAES newsletters, as needed, and seek input from the general public.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Survey of selected individuals from the general public
- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Survey specifically with non-traditional individuals
- Meeting with the general public (open meeting advertised to all)

Brief explanation

A number of stakeholder groups have previously been identified, and input is collected through regular meetings with discussion and feedback. For example, at Auburn, several commodity groups have committees to evaluate on-going research and new research proposals. Direct feedback to researchers and AARP administration is through the projects that get funding and through discussion about new and emerging issues.

3. A statement of how the input will be considered

- To Set Priorities
- Redirect Research Programs
- In the Staff Hiring Process
- To Identify Emerging Issues

Brief explanation.

Input from stakeholders are used to set program priorities and for identifying emerging issues relevant to agricultural activities.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

Enhancing Agricultural Production Systems, Value-Added Processing, and global Competitiveness

2. Brief summary about Planned Program

Research program is aimed at maintaining and improving agricultural production efficiency. Evaluations of production technologies, from a holistic problem solving approach, will be emphasized in order to achieve sustainable profitability of Alabama agriculture.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
125	Agroforestry	4%	4%	4%	4%
202	Plant Genetic Resources	15%	15%	15%	15%
205	Plant Management Systems	19%	19%	19%	19%
216	Integrated Pest Management Systems	20%	20%	20%	20%
302	Nutrient Utilization in Animals	20%	20%	20%	20%
311	Animal Diseases	10%	10%	10%	10%
402	Engineering Systems and Equipment	4%	4%	4%	4%
502	New and Improved Food Products	3%	3%	3%	3%
601	Economics of Agricultural Production and Farm Management	5%	5%	5%	5%
	Total	100%	100%	100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

With 45% of Alabama's population residing in rural areas, there is a substantial (though frequently indirect) dependency on net returns from agricultural production. Alabama's producers range in size from small-scale, limited resource and/or family farms to corporately owned entities. All farmers and agricultural producers face declining returns from traditional crops and practices and from increasing energy costs. Priorities are to develop and evaluate new and improved production of high value, energy, and alternative/speciality crops, adaptation of the best most efficient crop and animal management systems, and to transfer knowledge of these crops and systems to extension personnel, growers and other interested state citizens. In addition, new energy sources are needed.

2. Scope of the Program

- Integrated Research and Extension
- Multistate Integrated Research and Extension
- In-State Research
- Multistate Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The largest agricultural industries in AL are forestry, poultry, cattle, and greenhouse and nursery crop production. Agriculture will remain an important component of the economy of the state of Alabama. Greater production efficiency is possible. Producers will adapt new management strategies or technologies that are shown to improve profit. Resources will remain sufficient to continue these planned program efforts.

2. Ultimate goal(s) of this Program

To promote the production of agricultural products and practices with sustained economic return to producers.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	2.0	0.5	30.8	21.5
2010	2.0	0.5	29.8	21.5
2011	2.0	0.5	28.8	21.5
2012	2.0	0.5	27.8	21.5
2013	0.0	0.0	27.8	21.5

V(F). Planned Program (Activity)

1. Activity for the Program

Researchers will investigate improved production methods such as new pesticides and cultivars in plant production systems, new animal and fish breeds, and nutritional strategies in animal production systems. Research will explore innovative means to generate energy. Evaluations may include methods to reduce energy costs and economic analyses of markets. Research results are shared with extension personnel for further dissemination, particularly to county agents and producers. Additional dissemination of results are through direct grower contact (such as at field days and demonstrations, and commodity meetings), through publications (experiment station bulletins, on-line reports, press releases, as well as scientific journal articles), and may include non-traditional efforts, such as working through community and the use of the Internet such as web sites, utubes, itunes, etc.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• One-on-One Intervention • Demonstrations • Workshop • Education Class • Group Discussion	• Newsletters • Web sites

3. Description of targeted audience

Extension specialists, county agents, producers (particularly those that are innovative), all producers in the state, students (both K-12 and at our institutions), all state citizens. 48,000 people are said to be directly involved in farming; while Alabama's agribusiness industries account for 476,000 jobs.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	2000	12000	2000	8000
2010	2000	12000	2000	8000
2011	2000	12000	2000	8000
2012	2000	12000	2000	8000
2013	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 : 1 **2010 :** 1 **2011 :** 0 **2012 :** 0 **2013 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

V(H). State Defined Outputs

1. Output Target

- Publications

2009 : 80 **2010 :** 80 **2011 :** 80 **2012 :** 80 **2013 :** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	Market value of agricultural products ($ billion) (2006 = $5.29 B). Program success will be indicated if market value of AL ag products stay level or increase. (Medium term outcome)
2	Number of producers (ALFA cites 48,000, Apr. 2007). Program success will be reflected by little or no change in size of the population of producers. (Long-term)
3	Average producer age (2002 = 56.6). Program success will be indicated by declining or no change in the average producer age. (Long-term)

Outcome #1

1. Outcome Target

Market value of agricultural products ($ billion) (2006 = $5.29 B). Program success will be indicated if market value of AL ag products stay level or increase. (Medium term outcome)

2. Outcome Type : Change in Action Outcome Measure

2009 : 0	**2010 :** 0	**2011 :** 0	**2012 :** 0	**2013 :** 0

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 125 - Agroforestry
- 202 - Plant Genetic Resources
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases
- 402 - Engineering Systems and Equipment
- 502 - New and Improved Food Products
- 601 - Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Target

Number of producers (ALFA cites 48,000, Apr. 2007). Program success will be reflected by little or no change in size of the population of producers. (Long-term)

2. Outcome Type : Change in Condition Outcome Measure

2009 : 47900	**2010 :** 47900	**2011 :** 47900	**2012 :** 47900	**2013 :** 47900

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 125 - Agroforestry
- 202 - Plant Genetic Resources
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases
- 402 - Engineering Systems and Equipment
- 502 - New and Improved Food Products
- 601 - Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Target

Average producer age (2002 = 56.6). Program success will be indicated by declining or no change in the average producer age. (Long-term)

2. Outcome Type : Change in Condition Outcome Measure

2009 :55 **2010 :** 55 **2011 :** 55 **2012 :**55 **2013 :** 55

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 125 - Agroforestry
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 302 - Nutrient Utilization in Animals
- 502 - New and Improved Food Products
- 601 - Economics of Agricultural Production and Farm Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Public priorities
- Appropriations changes
- Natural Disasters (drought,weather extremes,etc.)
- Competing Programatic Challenges
- Government Regulations
- Populations changes (immigration,new cultural groupings,etc.)
- Economy
- Public Policy changes

Description

Agricultural systems are complex and easily affected by each of the external factors that are indicated.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Retrospective (post program)

Description

Specific projects that comprise the Planned Program are evaluated annually by dept. leaders. Overview of programs is by institution leaders.

2. Data Collection Methods

- Other (state and national statistics)
- Journals
- Sampling
- Observation

Description

Data to demonstrate program success will be obtained primarily from national and state agencies. Use of such data will avoid duplication of data collection effort, and provide a broader perspective of changes. Additional information and data will be obtained through observation, sampling and reporting for professional journals. For example, a survey of the citizenry about their personal food production (i.e., home-grown tomatoes) could demonstrate greater producer numbers than otherwise documented.

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

Food, Nutrition, Health and Well-being, and Agricultural Biosecurity

2. Brief summary about Planned Program

Obesity and related health problems are concerns to all Alabama citizens. Research conducted for this program will address issues of food choice, life style choice, and these choices as related to community sustainability. Research will also address means of delivering or producing healthier food products.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	29%		29%	29%
702	Requirements and Function of Nutrients and Other Food Component	25%		25%	25%
703	Nutrition Education and Behavior	19%		19%	19%
711	Ensure Food Products Free of Harmful Chemicals, Including Residue	2%		2%	2%
721	Insects and Other Pests Affecting Humans	17%		17%	17%
724	Healthy Lifestyle	8%		8%	8%
	Total	100%		100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In the U.S., the population of Alabama ranks high for obesity, hypertension, and related health problems, especially in minority groups. However, all citizens are vulnerable to these problems. Also related to this is an insufficient level of physical activity (sedentary lifestyle) by state citizens. Research priorities are to elucidate factors that contribute to unhealthy diet and lifestyle choices. Efforts are also being made to produce healthier plant- and animal-based foods (e.g., lower fat, higher vitamin content).

2. Scope of the Program

- Integrated Research and Extension
- Multistate Research
- In-State Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Poultry and specialty crops are major agricultural industries in the state. Microbial contaminants can shift, and knowledge and technology will remain abreast of these changes. Imports will remain a viable component of our food supply. Resources will remain sufficient for continuation of the program efforts.

2. Ultimate goal(s) of this Program

Improve health status of state citizens.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	1.9	0.0	12.7	9.5
2010	1.9	0.0	12.7	9.5
2011	1.9	0.0	12.7	9.5
2012	1.9	0.0	12.7	9.5
2013	0.0	0.0	12.7	9.5

V(F). Planned Program (Activity)

1. Activity for the Program

Research will include surveys on lifestyle habits (food choice, exercise, etc.) of citizens, evaluation of underlying reasons for these habits, program development for improvement, and measuring adoption of improved diets and activity levels. Research is also being conducted on, for example, animal production such that meat products are more healthful. In addition, research activities will explore non-traditional means of delivery of nutritive components. Research results are shared with extension personnel for further dissemination, particularly to county agents, consumers, and community leaders. Additional dissemination of results are through direct contact (such as survey participants and community gatherings), through publications (experiment station bulletins, on-line reports, press releases, as well as scientific journal articles), and may include non-traditional efforts, such as working through community and faith-based groups.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Group Discussion • Workshop • Education Class • Demonstrations • One-on-One Intervention	• TV Media Programs • Web sites • Newsletters • Public Service Announcement

3. Description of targeted audience

All state citizens, particularly targeted groups of high-risk citizens. Students (K through 12; college groups). Food producers and marketers.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	2000	18000	3000	7000
2010	2000	18000	3000	7000
2011	2000	18000	3000	7000
2012	2000	18000	3000	7000
2013	2000	18000	3000	7000

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 : 0 **2010 :** 0 **2011 :** 0 **2012 :** 0 **2013 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	8	0	0
2010	8	0	0
2011	8	0	0
2012	8	0	0
2013	0	0	0

V(H). State Defined Outputs

1. Output Target

- publications

2009 : 10 **2010 :** 10 **2011 :** 10 **2012 :** 10 **2013 :** 10

V(I). State Defined Outcome

O. No	Outcome Name
1	Decreased incidence of cases of food poisoning (AL state stats, % deaths from Salmonella and other intestinal infections in 2004 = 1.6%). Program success will be indicated by a decline or no change in this incidence. (Short-term outcome)
2	New technology(-ies) developed to monitor microbial contaminants. (Medium term outcome)
3	New professionals in workforce with training in food safety and security. (Long-term)

Outcome #1

1. Outcome Target

Decreased incidence of cases of food poisoning (AL state stats, % deaths from Salmonella and other intestinal infections in 2004 = 1.6%). Program success will be indicated by a decline or no change in this incidence. (Short-term outcome)

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 0	**2010 :** 0	**2011 :** 0	**2012 :** 0	**2013 :** 0

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 721 - Insects and Other Pests Affecting Humans
- 724 - Healthy Lifestyle

Outcome #2

1. Outcome Target

New technology(-ies) developed to monitor microbial contaminants. (Medium term outcome)

2. Outcome Type : Change in Action Outcome Measure

2009 : 0	**2010 :** 0	**2011 :** 0	**2012 :** 0	**2013 :** 0

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 721 - Insects and Other Pests Affecting Humans
- 724 - Healthy Lifestyle

Outcome #3

1. Outcome Target

New professionals in workforce with training in food safety and security. (Long-term)

2. Outcome Type : Change in Condition Outcome Measure

2009 : 17	**2010 :** 23	**2011 :** 31	**2012 :** 50	**2013 :** 50

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 721 - Insects and Other Pests Affecting Humans
- 724 - Healthy Lifestyle

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Populations changes (immigration,new cultural groupings,etc.)
- Competing Public priorities
- Government Regulations
- Public Policy changes
- Competing Programatic Challenges
- Other (catastrophic food poisoning)
- Economy

Description

Food supply systems are complex and easily affected by each of the external factors that are indicated.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Retrospective (post program)

Description

Specific projects that comprise the Planned Program are evaluated annually by dept. leaders. Overview of programs is by institution leaders.

2. Data Collection Methods

- Sampling
- Observation

Description

Data to demonstrate program success will be obtained primarily from national and state agencies. Use of such data will avoid duplication of data collection efforts, and provide a perspective of (possible) changes. Additional information and data will be obtained through observation, sampling and reporting in professional journal. For example, a survey of the citizenry about their healthful food choices from a health perspective could reveal information that is not available through other statistical reports.

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

Sustaining Environment, Ecosystems, and Natural Resources

2. Brief summary about Planned Program

Research will address the complex interrelations between agricultural production, environmental and natural resources (including those that are merely aesthetic), and human populations.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	5%		5%	5%
102	Soil, Plant, Water, Nutrient Relationships	6%		6%	6%
112	Watershed Protection and Management	16%		16%	16%
125	Agroforestry	4%		4%	4%
133	Pollution Prevention and Mitigation	15%		15%	15%
135	Aquatic and Terrestrial Wildlife	20%		20%	20%
216	Integrated Pest Management Systems	21%		21%	21%
403	Waste Disposal, Recycling, and Reuse	8%		8%	8%
610	Domestic Policy Analysis	5%		5%	5%
	Total	100%		100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The abundant natural resources of Alabama must be maintained for future populations. Priorities include waste management, natural resource management, water quality and quantity, eco-tourism and intelligent pest management.

2. Scope of the Program

- Multistate Research
- Multistate Integrated Research and Extension
- In-State Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

All state citizens are concerned about abundance of natural resources, including water, for future generations. Resources continue to be available for conducting program. Production of waste will continue and amount will increase.

2. Ultimate goal(s) of this Program

Maintain agricultural productivity without disrupting the available quantity and quality of all of Alabama's natural resources.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	3.0	0.0	22.1	11.5
2010	3.0	0.0	22.1	11.5
2011	3.0	0.0	22.1	11.5
2012	3.0	0.0	22.1	11.5
2013	0.0	0.0	22.1	11.5

V(F). Planned Program (Activity)

1. Activity for the Program

Research will be directed at better ways of: managing agricultural wastes; promoting agro-tourism; and analyzing land and water use patterns and resources. Research results are shared with extension personnel for further dissemination, particularly to county agents, producers, industry leaders, policy-makers, citizens, and related federal agency personnel. Additional dissemination of results are through direct contact (such as demonstrations and community meetings), through publications (experiment station bulletins, on-line reports, press releases, as well as scientific journal articles), and may include non-traditional efforts, such as working through community and faith-based groups.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Workshop • Demonstrations • One-on-One Intervention • Education Class • Group Discussion	• Public Service Announcement • TV Media Programs • Newsletters • Web sites

3. Description of targeted audience

Producers, industry leaders, policy-makers, citizens, and related federal agency personnel.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	1200	9000	300	900
2010	1200	9000	300	900
2011	1200	9000	300	900
2012	1200	9000	300	900
2013	1200	9000	300	900

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :0 **2010 :**0 **2011 :** 0 **2012 :**0 **2013 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

V(H). State Defined Outputs

1. Output Target

- publications

2009 :35 **2010 :**35 **2011 :** 35 **2012 :**35 **2013 :**35

V(I). State Defined Outcome

O. No	Outcome Name
1	Estimated tourism receipts = $7.6 billion in 2005. Success of this program will result in maintenance or increase in revenue (medium term outcome).
2	Fish consumption advisories in sampled waters = 26 instances in 2004 (ADEM water board). Success of this program will result in decline of water contaminants that accumulate in fish, and consumption advisories will also subsequently decline. (Long-term outcome)
3	Incidence of ground water contamination of ~ 5000 sampled sites = 20% in 2002-2003. Success of this program will result in a decline of contaminant incidence (medium term outcome).

Outcome #1

1. Outcome Target

Estimated tourism receipts = $7.6 billion in 2005. Success of this program will result in maintenance or increase in revenue (medium term outcome).

2. Outcome Type : Change in Action Outcome Measure

2009 : 0	**2010 :** 0	**2011 :** 0	**2012 :** 0	**2013 :** 0

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 610 - Domestic Policy Analysis

Outcome #2

1. Outcome Target

Fish consumption advisories in sampled waters = 26 instances in 2004 (ADEM water board). Success of this program will result in decline of water contaminants that accumulate in fish, and consumption advisories will also subsequently decline. (Long-term outcome)

2. Outcome Type : Change in Condition Outcome Measure

2009 : 24	**2010 :** 24	**2011 :** 23	**2012 :** 0	**2013 :** 0

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #3

1. Outcome Target

Incidence of ground water contamination of ~ 5000 sampled sites = 20% in 2002-2003. Success of this program will result in a decline of contaminant incidence (medium term outcome).

2. Outcome Type : Change in Action Outcome Measure

2009 : 0	**2010 :** 0	**2011 :** 0	**2012 :** 0	**2013 :** 0

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 125 - Agroforestry
- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Competing Programatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)
- Economy
- Appropriations changes
- Government Regulations
- Public Policy changes
- Competing Public priorities

Description

Agriculture and the natural environment are complex, interrelated systems --each of which are easily affected by the external factors that are indicated.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Description

Specific projects that comprise the Planned Program are evaluated annually by dept. leaders. Overview of programs is by institution leaders.

2. Data Collection Methods

- Other (state and national statistics)
- Sampling
- Observation

Description

Data to demonstrate program success will be obtained primarily from national and state agencies. Use of such data will avoid duplication of data collection effort, and provide a broader perspective of (possible) changes. Additional information and data will be obtained through observation, sampling and reporting for professional journals.

V(A). Planned Program (Summary)

Program #4

1. Name of the Planned Program

Supporting and enhancing economic opportunities and self-empowerment for families and communities

2. Brief summary about Planned Program

Research will address family and community issues that ultimately contribute to sustainability.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources			15%	15%
134	Outdoor Recreation			3%	3%
802	Human Development and Family Well-Being			25%	25%
803	Sociological and Technological Change Affecting Individuals, Familie			19%	19%
804	Human Environmental Issues Concerning Apparel, Textiles, and Res			8%	8%
805	Community Institutions, Health, and Social Services			11%	11%
806	Youth Development			19%	19%
	Total			100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Alabama has a high percentage of rural communities which value the potential of each of their citizens. Building sustainability and excellence in communities, through citizen involvement and strengthening of families, is an important priority for enriching human potential. Establishing self-confidence in youth, such that they achieve their full potential, is also a priority.

2. Scope of the Program

- Multistate Research
- Integrated Research and Extension
- In-State Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Retention and training of youth and young citizens in communities have a positive effect on those communities, as well as on family stability and economic growth. Resources will continue to be available for conducting this program.

2. Ultimate goal(s) of this Program

Skill enhancement; entrepreneurship; sustained rural communities; identification of factors that affect family and community sustainability and self-empowerment.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	10.8	13.5
2010	0.0	0.0	10.8	13.5
2011	0.0	0.0	10.8	13.5
2012	0.0	0.0	10.8	13.5
2013	0.0	0.0	10.8	13.5

V(F). Planned Program (Activity)

1. Activity for the Program

Research will assess: impact of technological and sociological changes on family and communities; impact of family interactions on success of youth; availability and accessibility of health and social services to rural families and communities. Research results are shared with extension personnel for further dissemination, particularly to community leaders and educators and through leadership training. Additional dissemination of results are through direct contact (such as at school and community meetings), publications (experiment station bulletins, on-line reports, press releases, as well as scientific journal articles), and may include non-traditional efforts, such as working through community and faith-based groups.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Education Class • One-on-One Intervention • Group Discussion • Demonstrations • Workshop	• TV Media Programs • Public Service Announcement • Web sites • Newsletters

3. Description of targeted audience

Extension personnel, community leaders, educators, 4H, youth centers.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	1100	33000	900	3300
2010	1100	33000	900	3300
2011	1100	33000	900	3300
2012	1100	33000	900	3300
2013	1100	33000	900	3300

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :0 **2010 :**0 **2011 :** 0 **2012 :**0 **2013 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

V(H). State Defined Outputs

1. Output Target

- publications

2009 :20 **2010 :**20 **2011 :** 20 **2012 :**20 **2013 :**20

V(I). State Defined Outcome

O. No	Outcome Name
1	High school graduation rate (88.8% AL Dept. Educ. 2004-2005, from drop-out rate = 11.18%). Improvements in community and family integrity should increase this (medium term outcome).
2	Educational attainment (post secondary) (AL Dept Educ., Fall 2005, 55.8% of all high school graduates were enrolled in AL colleges). Success of this program should increase this (long-term outcome).
3	The number of small businesses should increase with success of this program. In 2001, US Bureau of Labor states that 229.7 (in thousands) 'non-employer' firms were existent in AL (medium term outcome).
4	AL Dept. Health notes that 4 of Alabama's 67 counties have fewer than 3 physicians per 10,000 residents. Success of this program should increase this (medium term outcome).

Outcome #1

1. Outcome Target

High school graduation rate (88.8% AL Dept. Educ. 2004-2005, from drop-out rate = 11.18%). Improvements in community and family integrity should increase this (medium term outcome).

2. Outcome Type : Change in Action Outcome Measure

2009 : 91	**2010 :** 91	**2011 :** 91	**2012 :** 91	**2013 :** 91

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

Outcome #2

1. Outcome Target

Educational attainment (post secondary) (AL Dept Educ., Fall 2005, 55.8% of all high school graduates were enrolled in AL colleges). Success of this program should increase this (long-term outcome).

2. Outcome Type : Change in Condition Outcome Measure

2009 : 58	**2010 :** 58	**2011 :** 58	**2012 :** 58	**2013 :** 58

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

Outcome #3

1. Outcome Target

The number of small businesses should increase with success of this program. In 2001, US Bureau of Labor states that 229.7 (in thousands) 'non-employer' firms were existent in AL (medium term outcome).

2. Outcome Type : Change in Action Outcome Measure

2009 : 231	**2010 :** 231	**2011 :** 231	**2012 :** 231	**2013 :** 231

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources

- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 805 - Community Institutions, Health, and Social Services

Outcome #4

1. Outcome Target

AL Dept. Health notes that 4 of Alabama's 67 counties have fewer than 3 physicians per 10,000 residents. Success of this program should increase this (medium term outcome).

2. Outcome Type : Change in Action Outcome Measure

2009 : 0	**2010 :** 0	**2011 :** 0	**2012 :** 0	**2013 :** 0

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Populations changes (immigration,new cultural groupings,etc.)
- Competing Public priorities
- Appropriations changes
- Government Regulations
- Competing Programatic Challenges
- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes

Description

Steady progress in improving economic opportunities for families and communities can be easily de-railed by each of the external factors that are indicated.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Retrospective (post program)

Description

Specific projects that comprise the Planned Program are evaluated annually by dept. leaders. Overview of program is by institution leaders.

2. Data Collection Methods

- Observation
- Sampling

Description

Data to demonstrate program success will be obtained primarily from national and state agencies. Use of such data will avoid duplication of data collection efforts, as well as provide a broader perspective of family and community 'health.' Additional information and data may be obtained through observation, by sampling and from reports in professional journals. For example, a

survey of the citizenry about their perception of opportunities may reveal a different situation than are interpreted from the statistics.

V(A). Planned Program (Summary)

Program #5

1. Name of the Planned Program

Bioenergy and Bio-based Economy

2. Brief summary about Planned Program

Research will address issues related to renewable energy using bio-based feedstocks that ultimately contribute to the relief of energy dependence on foreign sources.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
202	Plant Genetic Resources			5%	5%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants			20%	20%
205	Plant Management Systems			10%	10%
212	Pathogens and Nematodes Affecting Plants			10%	10%
216	Integrated Pest Management Systems			10%	10%
402	Engineering Systems and Equipment			10%	10%
403	Waste Disposal, Recycling, and Reuse			10%	10%
601	Economics of Agricultural Production and Farm Management			10%	10%
605	Natural Resource and Environmental Economics			10%	10%
607	Consumer Economics			5%	5%
	Total			100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Alabama is rich in natural resources such as forestry and other sources suitable for consideration as bioenergy feedstocks. Alabama's climate is also highly adaptable to growth of highly productive energy crops such as switchgrasses. Development of methodologies and technologies for the utilization of such natural resources for the purpose of energy is an important priority for our country's energy-based economy.

2. Scope of the Program

- Integrated Research and Extension
- Multistate Research
- In-State Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Development of renewable energy will reduce the pressure of high gasoline prices, and in the long-term, should contribute to reduction of energy dependence on foreign sources.

2. Ultimate goal(s) of this Program

To develop bio-based renewable energy alternative to supplement, if not replace, fossil fuel-based energy sources.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	7.0	6.5
2010	0.0	0.0	8.0	6.5
2011	0.0	0.0	9.0	6.5
2012	0.0	0.0	10.0	6.5
2013	0.0	0.0	10.0	6.5

V(F). Planned Program (Activity)

1. Activity for the Program

Research will assess: the productivity of different plant crops, alternative crops and forest such as switchgrasses, poplars trees, pine trees as well as algae for the production of biomass, production practices that influence the yield and production duration of these plants or algae, genetic or physiological improvements of such crops through breeding or biotechnology, and impact of bio-energy crops on agriculture in a broad spectrum of issues such as rotation, irrigation, water requirements, production and processing, environmental, economic, and social impact; development of technologies for efficient conversion of cellulose-based bio-energy; development of technologies for utilization of by-products and waste from bio-energy processing.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Workshop • Group Discussion • One-on-One Intervention • Education Class • Demonstrations	• Web sites • Newsletters • TV Media Programs • Public Service Announcement

3. Description of targeted audience

extension personnel, community leaders, educators, 4H, youth centers, energy consumers, general public.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	1000	30000	1000	3000
2010	1000	30000	1000	3000
2011	1000	30000	1000	3000
2012	1000	30000	1000	3000
2013	1000	30000	1000	3000

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :0 **2010 :**0 **2011 :** 0 **2012 :**0 **2013 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	1	0	0

V(H). State Defined Outputs

1. Output Target

- {NO DATA ENTERED}

{NO DATA ENTERED} {NO DATA ENTERED} {NO DATA ENTERED} {NO DATA ENTERED} {NO DATA ENTERED}

V(I). State Defined Outcome

O. No	Outcome Name
1	Development of technology for production of bioenergy crops or algae leading to the increase of yields (ton per acre per year)
2	Publications
3	Increased acreage of bioenergy crops such as corn, swithgrasses
4	Increased percentage of bioenergy in the overall consumption of energy
5	Development of technology for production of bioenergy crops or algae leading to the increase of yields (ton per acre per year)

Outcome #1

1. Outcome Target

Development of technology for production of bioenergy crops or algae leading to the increase of yields (ton per acre per year)

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 7	**2010 :** 8	**2011 :** 9	**2012 :** 9	**2013 :** 10

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics

Outcome #2

1. Outcome Target

Publications

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 8	**2010 :** 12	**2011 :** 15	**2012 :** 15	**2013 :** 15

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics

- 607 - Consumer Economics

Outcome #3

1. Outcome Target

Increased acreage of bioenergy crops such as corn, swithgrasses

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 20	**2010 :** 100	**2011 :** 200	**2012 :** 300	**2013 :** 500

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 402 - Engineering Systems and Equipment

Outcome #4

1. Outcome Target

Increased percentage of bioenergy in the overall consumption of energy

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 1	**2010 :** 2	**2011 :** 4	**2012 :** 6	**2013 :** 7

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics

Outcome #5

1. Outcome Target

Development of technology for production of bioenergy crops or algae leading to the increase of yields (ton per acre per year)

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 7	**2010 :** 8	**2011 :** 9	**2012 :** 9	**2013 :** 10

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 402 - Engineering Systems and Equipment

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Public Policy changes
- Appropriations changes
- Competing Programatic Challenges
- Competing Public priorities
- Economy
- Natural Disasters (drought,weather extremes,etc.)
- Government Regulations

Description

Steady progress for the development of bioenergy or other types of renewable energy can be easily de-railed by each of the external factors that are indicated.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Description

Specific projects that comprise the Planned Program are evaluated annually by dept. leaders. Overview of programs is by institution leaders.

2. Data Collection Methods

- Observation
- Sampling

Description

Data to demonstrate program success will be obtained primarily from national and state agencies. Use of such data will avoid duplication of data collection efforts, as well as provide a broader perspective of energy utilization and distribution of various forms of energy. Additional information and data may be obtained through observation, sampling and reporting in professional journals.

V(A). Planned Program (Summary)

Program #6

1. Name of the Planned Program

Agricultural Genomics and Other Basic Agricultural Research

2. Brief summary about Planned Program

Research will develop basic genome resources such as genetic markers, genetic maps, physical maps, expressed sequence tags, and use the genome resources to determine genetic basis for important performance traits such as growth rate, feed conversion efficiency, resistance to diseases, tolerance to biological and environmental stresses, crop yield, meat quality, and various other traits.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms			10%	10%
202	Plant Genetic Resources			20%	20%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants			10%	10%
303	Genetic Improvement of Animals			20%	20%
304	Animal Genome			30%	30%
311	Animal Diseases			10%	10%
	Total			100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Research will develop basic genome resources such as genetic markers, genetic maps, physical maps, expressed sequence tags, and use the genome resources to determine genetic basis for important performance traits such as growth rate, feed conversion efficiency, resistance to diseases, tolerance to biological and environmental stresses, crop yield, meat quality, and various other traits.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension
- Multistate Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Understanding of the genomes of agricultural plants and animals should assist in decision making for selection of superior varieties and breeds for production.

2. Ultimate goal(s) of this Program

To develop genome-based technologies such as marker-assisted selection and other biotechnologies to enhance both productivity and efficiency of plants and animals.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	5.0	2.5
2010	0.0	0.0	5.0	2.5
2011	0.0	0.0	5.0	2.5
2012	0.0	0.0	5.0	2.5
2013	0.0	0.0	5.0	2.5

V(F). Planned Program (Activity)

1. Activity for the Program

Research will determine structure, organization, and expression of genomes of various plant and animal species. Particular focus species include beef cattle, catfish, watermelon, peanut, sweet potatoes, and cotton. Molecular markers of various kinds will be developed, mapped, and association studies will be conducted to link molecular markers with performance traits. Genetic, physical, and haplotype maps will be constructed to fully understand genome structure, evolution, expression, and function.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Education Class • Workshop • Group Discussion	• Newsletters • Web sites

3. Description of targeted audience

Extension personnel, community leaders, educators, 4H, youth centers, energy consumers, general public.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	1000	30000	1000	3000
2010	1000	30000	1000	3000
2011	1000	30000	1000	3000
2012	1000	30000	1000	3000
2013	1000	30000	1000	3000

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :0 **2010 :**0 **2011 :** 0 **2012 :** 0 **2013 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	1	0	0

V(H). State Defined Outputs

1. Output Target

- Publications

  2009 :5 **2010 :**10 **2011 :** 15 **2012 :**20 **2013 :**20

- Development of molecular markers

  2009 :300 **2010 :**1000 **2011 :** 3000 **2012 :**4000 **2013 :**5000

- Increased genetic map resolution in the unit of centi-Morgans

  2009 :10 **2010 :**5 **2011 :** 3 **2012 :**1 **2013 :**0

- Identification of traits linked markers for marker-assisted selection

  2009 :1 **2010 :**2 **2011 :** 5 **2012 :**10 **2013 :**10

- Identification of traits linked markers for marker-assisted selection

2009 : 10 **2010 :** 20 **2011 :** 50 **2012 :** 100 **2013 :** 150

V(I). State Defined Outcome

O. No	Outcome Name
1	Publications
2	Development of molecular markers
3	Increased genetic map resolution in the unit of centi-Morgans
4	Identification of traits linked markers for marker-assisted selection
5	Characterization of genes of agricultural relevance

Outcome #1

1. Outcome Target

Publications

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 10	**2010 :** 15	**2011 :** 20	**2012 :** 20	**2013 :** 25

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 311 - Animal Diseases

Outcome #2

1. Outcome Target

Development of molecular markers

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 300	**2010 :** 1000	**2011 :** 2000	**2012 :** 3000	**2013 :** 4000

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 311 - Animal Diseases

Outcome #3

1. Outcome Target

Increased genetic map resolution in the unit of centi-Morgans

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 10	**2010 :** 5	**2011 :** 3	**2012 :** 1	**2013 :** 0

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 311 - Animal Diseases

Outcome #4

1. Outcome Target

Identification of traits linked markers for marker-assisted selection

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 1	**2010 :** 2	**2011 :** 5	**2012 :** 10	**2013 :** 10

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 311 - Animal Diseases

Outcome #5

1. Outcome Target

Characterization of genes of agricultural relevance

2. Outcome Type : Change in Knowledge Outcome Measure

2009 : 10	**2010 :** 20	**2011 :** 50	**2012 :** 100	**2013 :** 150

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 311 - Animal Diseases

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Government Regulations
- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Competing Public priorities
- Public Policy changes

Description

Fundamental research using genome-based technologies can be easily de-railed by each of the external factors that are indicated.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Description

Specific projects that comprise the Planned Program are evaluated annually by dept. leaders. Overview of programs is by institution leaders.

2. Data Collection Methods

- Observation
- Sampling

Description

Data to demonstrate program success will be obtained primarily from national and state agencies. Use of such data will avoid duplication of data collection efforts, as well as provide a broader perspective of energy utilization and distribution of various forms of energy. Additional information and data may be obtained through observation, sampling and reporting in professional journals.